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AUTHOR Begle, E.G.; And Others
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ABSTRACT

This study investigated mathematical retention of junior high school students over the summer months. Approximately 41 percent of the eighth-grade subjects used in this study were Chicano; the others were Anglo, Black, Oriental, and American Indian. The subjects were divided by ethnic group--Chicano or non-Chicano--and according to whether or not they had received pretraining on the tests. The retention tests, administered in June and again in September, measured (1) mathematical reasoning, (2) computation, (3) comprehension, and (4) the ability to read mathematical prose. It was found that the Chicano students who were pretrained in June scored higher than those not pretrained. In general, no loss of comprehension or mathematical reasoning over the summer months was found, and the ability to read mathematical prose seemed to increase slightly over the summer months. (MM)

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Teacher Corps Mathematics Work/Study Group
Working Paper No. 1

Mathematical Retention over the Summer

By: E. G. Begle, Joan R. Ginther, Barbara Pence, and Moira Davis

Introduction

With the cooperation of Herbert Hoover Junior High School[1], this study was conducted by the Stanford/Hoover Teacher Corps Mathematics Work/Study Group in September 1975.

The purpose of this study is to investigate mathematical retention over the summer months. The retention tests administered measure several levels: (1) mathematical reasoning, (2) computation, (3) comprehension, and (4) the ability to read mathematical prose.

Population

Herbert Hoover Junior High School was selected for this study for two reasons: (1) the school is a co-sponsor of the Stanford/Hoover Teacher Corps Project, and (2) the eighth grade students who were administered the retention tests were administered the same tests in a previous study carried out when they were seventh graders in June of 1975.

Approximately 41% of the eighth graders used in this study were classified as Chicano. All English as a Second Language (ESL) students were eliminated from the study due to reading difficulties. 56% of the eighth grade population was a combination of Anglo, Black, Oriental, American Indian, and others.

Procedure

In June, 1975, the seventh graders of Hoover Junior High School were administered a test battery consisting of four tests: the Arithmetic Reasoning Test, the Missing Words Test, a Computation

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[1]We acknowledge with thanks the cooperation and assistance of the principal, Mr. Ralph; the R-3 coordinator, Mrs. Pauline Perazzo; the teachers, Mrs. Vicki Chan, Mr. Elisha Parks, and Mrs. Clara Schneider; and the teachers' aides, Mrs. Oralia Juarez, Mrs. Norma Kennedy, and Mrs. Evelyn Perez.

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Test, and a Comprehension Test. These tests were administered in conjunction with a project directed by the Stanford Mathematics Education Study Group (SMESG Working Paper No. 14).

On September 11, 1975, the second day of classes at the junior high school, the same test battery was administered to the students who were just beginning the eighth grade.

Analysis and Results

Before the data analysis was performed, all students who had not participated in the seventh grade study were omitted. Only 16 students (11%) who participated in the seventh grade study were not present for the retention testing. The students were stratified into the same four groups used in the June, 1975 study:

(1) Chican Ss who were pretrained on the Arithmetic Reasoning Test
(2) Chicano Ss who were pretrained on the Missing Words Pretest
(3) Non-Chicano Ss who were pretrained on the Arithmetic Reasoning Test
(4) Non-Chicano Ss who were pretrained on the Missing Words Pretest.

A. MEAN SCORES

	June 1975			September 1975		
	N	Mean	St. Dev.	N	Mean	St. Dev.
COMPUTATION						
Group 1	26	12.760	2.454	25	13.16	2.572
Group 2	35	13.171	1.934	30	13.30	1.656
Group 3	35	13.943	1.218	30	13.70	.900
Group 4	40	14.025	1.235	35	13.371	1.774
COMPREHENSION						
Group 1		9.720	3.144		11.00	2.757
Group 2		10.486	2.322		10.167	2.034
Group 3		11.257	1.962		12.467	1.500
Group 4		12.050	1.857		12.057	1.835
ARITHMETIC REASONING						
Group 1		4.520	2.081		4.320	2.445
Group 2		3.971	1.576		4.533	1.454
Group 3		5.343	1.881		6.200	1.869
Group 4		6.075	1.967		6.829	1.934
MISSING WORDS						
Group 1		18.64	5.469		20.76	5.955
Group 2		17.40	5.587		19.90	6.295
Group 3		22.914	3.835		25.032	2.960
Group 4		23.725	4.817		25.885	3.296

B. RELIABILITIES

	June 1975	September 1975
COMPUTATION		
Group 1	.779	.829
Group 2	.649	.563
Group 3	.399	-0.364
Group 4	.460	.624
COMPREHENSION		
Group 1	.767	.736
Group 2	.585	.463
Group 3	.515	.339
Group 4	.534	.489
ARITHMETIC REASONING		
Group 1	.568	.722
Group 2	.258	.083
Group 3	.588	.544
Group 4	.579	.559
MISSING WORDS		
Group 1	.852	.906
Group 2	.866	.910

The reliabilities for Groups 3 and 4 were not computed in this study because Groups 3 and 4 were predominantly Anglo students, and the Missing Words Test has been found reliable for all Anglo groups.

Discussion

In general, previous research studies have shown a loss of computation skills over the summer months. This study showed no such loss for either ethnic group involved.

This study also found no loss in comprehension or mathematical reasoning over the summer. Previous studies support this finding.

The ability to read mathematical prose appears to have increased slightly over the summer.

The most striking result obtained from this study is the fact that the Chicano student who were pretrained on the Arithmetic Reasoning Test in June maintained their high reliability coefficient

on the test. The Chicano students who were not pretrained on the Arithmetic Reasoning Test still showed unreliable scores for this test. This result favors the conclusion that pretraining Chicano students before administering a test will improve the reliability of the test.